

### REMARKS

This application has been reviewed in light of the Office Action dated August 5, 2003. Claims 10-25 are pending in this application and none of these claims have been amended in this Response. Claims 10, 19, 20, and 23 are in independent form. Favorable reconsideration is requested.

A Claim To Priority and a certified copy of the priority document for this application were filed on March 30, 2000, as evidenced by the returned receipt postcard bearing the stamp of the Patent and Trademark Office, a copy of which is attached hereto. Applicant respectfully requests acknowledgment of the claim for foreign priority and the receipt of the certified copy of the priority application.

The Office Action rejected Claims 10-25 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,757,840 (Hiroki). Applicant respectfully traverses this rejection.

Applicant submits that Claim 10 is patentably distinct from Hiroki at least for the following reasons.

The aspect of the present invention set forth in Claim 10 is a laser that includes a first region, a second region, and a phase-controlling region. The first region has a first waveguide that includes a first diffraction grating. The second region has a second waveguide that includes a second diffraction grating. The phase controlling region has a third waveguide that includes a control means for controlling an effective refractive index of the third waveguide. The phase controlling region, second region, and first region are serially coupled in this order, and are constructed such that a coupling coefficient of the second region adjacent to the phase controlling region is smaller than a coupling coefficient of the first region, and the first and second diffraction gratings have a common value of pitch.

Among the notable features of Claim 10 are that the phase controlling region, second region, and first region are constructed such that a coupling coefficient  $\kappa$  of the second region adjacent to the phase controlling region is smaller than a coupling coefficient of the first region.

Hiroki relates to a semiconductor laser modulation method and optical communication system using the same. Hiroki discusses a semiconductor laser that includes a distributed feedback semiconductor laser structure having a plurality of regions. In the semiconductor laser,  $\alpha$  parameters for transverse electric (TE) and transverse magnetic (TM) polarization modes, in the vicinity of threshold currents for the TE mode and the TM mode, are made different. An  $\alpha$  parameter is defined by  $4\pi/\lambda (dn/dN)/dg/dN$  where " $\lambda$ " is a Bragg wavelength, " $n$ " is an effective refractive index, " $N$ " is an injection carrier density and " $g$ " is a gain for each of the TE mode and TM mode. In Hiroki, the specification at column 5, lines 44-49, discusses that the diffraction grating 121 has a  $\lambda/4$  phase-shift section 121a. Applicant submits, however, that Hiroki merely discusses a semiconductor laser defined by an  $\alpha$  parameter and the position of the  $\lambda/4$  phase shift. In other words, Applicant submits that Hiroki does not teach or suggest a first region being constructed such that a coupling coefficient  $\kappa$  of the second region adjacent to the phase controlling region is smaller than a coupling coefficient of the first region, as recited in Claim 10.

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Accordingly, Applicant submits that, at least for this reason, Claim 10 is patentable over Hiroki.

Independent Claims 19, 20, and 23 are method, apparatus, and system claims, respectively, that include the same feature of a first region being constructed such that a coupling coefficient  $\kappa$  of the second region adjacent to the phase controlling region is smaller than a coupling coefficient of the first region, as discussed above in connection


with Claim 10. Accordingly, Claims 19, 20, and 23 are believed to be patentable for at least the same reasons as discussed above in connection with Claim 10.

The other rejected claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

  
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